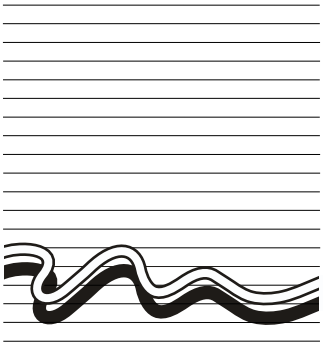

Mestre Greve Associates

November 13, 2008

Mr. Mike Mais
Assistant City Attorney
Long Beach Airport
4100 Donald Douglas Drive
Long Beach, CA 90808

Subject: Long Beach Airport Noise Budget Calculations For Noise Year October 1, 2007 to September 30, 2008

Dear Mike,

Mestre Greve Associates has completed the analysis of the Airline Noise Budget for Noise Year October 1, 2007 through September 30, 2008 (NY '07-08). The following table compares the allowed budget with the actual budget used:

Location	Allowed Budget	Actual Budget Used
RMT 9	70.7	71.4
RMT 10	84.6	65.9

The data shows that the air carriers operated above the allowed budget at RMT 9 and below the allowed budget at RMT 10. Because the air carriers operated above the allowed budget additional flights cannot be allocated as prescribed in the City's Noise Compatibility Ordinance.

The NY '07-08 was significantly impacted by fluctuations in the air carrier fleet mix relative to the previous years. In particular, during this noise year the airlines phased out the MD80 aircraft at the airport, and the air cargo operators phased out the B727 aircraft. The MD80 and B727 are the noisiest air carrier passenger and cargo aircraft operating at Long Beach and have significant effects on the budget calculations. There were sufficient numbers of these operations during the year prior to full phase-out to cause RMT 9 to exceed the allocated budget at this location.

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Noise Budget Methodology

The noise budget status was computed from individual flight data collected from the Long Beach Airport's permanent airport noise monitoring system (ANOMS). Individual data was provided for each of the commercial airline flights arriving and departing from Long Beach Airport during the budget year. The following paragraphs describe how the computations were done:

An example of 5 flights recorded at RMT 9 are as follows:

Max Date Time	Aircraft Type	Airline	A/D/O	Runway	RMT	SEL
10/1/02 7:06	MD80	AAL	D	30	9	99.7
10/1/02 7:09	A320	JBU	D	30	9	89.8
10/1/02 7:11	A320	AWE	D	30	9	88.2
10/1/02 7:17	A320	JBU	D	30	9	94.7
10/1/02 8:02	A320	JBU	D	30	9	90

The first column lists the date and time of the flight. The time used for noise budget calculations is the time that the noise event was recorded at the monitoring site, not the scheduled flight time. Subsequent data includes the aircraft type, airline, departure/arrival/overflight, runway utilized, noise monitor measurement site, and the Sound Exposure Level (SEL), in decibels, as measured at the RMT (remote monitoring terminal).

It is interesting to note that 4 of the 5 aircraft in the above example are Airbus A-320's and there is a substantial range in the measured noise level. There are many factors that contribute to this range, but the most significant is aircraft weight. Aircraft weight is a function of the number of passengers and the distance to the destination. A flight of 2000 miles carries substantially more fuel that a flight of 250 miles.

Noise Budget Calculations and Analysis

The conversion of the measured SEL at RMT 9 and RMT 10, is done according to the budget definitions and as prescribed in the City's Noise Compatibility Ordinance (LBMC 16.43).

The first step in analyzing the data is to convert the noise measurements made at RMT 9 and RMT 10 to the noise level at the nearest residences to Runway 12/30. For RMT 9 the noise level is increased by 1.1 dB and at RMT 10 the noise level is increased by 0.9 dB to account for the fact that the nearest homes are closer to the runway than the actual monitoring stations.

The next step is to convert the noise level at the nearest home to an equivalent number of daytime flights of the 'standard' aircraft that is built into the budget. This equivalent number of daytime flights is termed "budget units." The 'standard' aircraft noise level is the SEL that 100 daytime flights would have to have to produce a CNEL of 65 dB at the nearest residence.

The equation for CNEL as a function of SEL and number of daytime flights is as follows:

$$CNEL = SEL + 10Log_{10}N_{eq} - 49.4$$

The above equation can be solved for a value of 65 CNEL and 100 daytime flights and the result is that the 'standard' aircraft SEL is 94.4 dB. The task of converting the actual SEL to an equivalent number of budget units is done using the following equation:

$$N = \frac{10^{SEL/10}}{10^{94.4/10}}$$

The N computed in the above equation is the number of equivalent noise budget units that are contributed to the budget for a daytime flight. If the flight occurred between the hours of 7 pm and 10 pm, the result is multiplied by a factor of 3. If the flight occurred between the hours of 10 pm and 7 am the result is multiplied by a factor 10. Note that for purposes of this computation, the evening penalty begins at 7:00:00 pm and ends at 9:59:59 pm and the night penalty begins at 10:00:00 pm and ends at 6:59:59 pm. There are no exceptions to the evening and night penalties. For example an aircraft may begin its takeoff roll prior to 10 pm but produce a noise event at RMT 9 or 10 after 10 pm. In that case the after 10 pm penalty is applied.

The resulting numbers of equivalent budget units are then compared to the budget allocations of 70.7 budget units at RMT 9, and 84.6 at RMT 10. The budget allocations were based on the 1989/90 baseline actual noise level and industrial aircraft forecast as prescribed in the federal court approved and federal code-grandfathered Long Beach Airport Noise Compatibility Ordinance LBMC 16.43).

The Long Beach Ordinance provides that "additional Flights may be allocated to Air Carriers based on the cumulative noise generated by Air Carrier Operations during the prior twelve month period." Our findings show that NY 2007-2008 budget was exceeded at RMT 9.

If you have any questions please do not hesitate to call.

Yours very truly,
Mestre Greve Associates

Vincent Mestre, P.E.